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REC'D 28 JUN 2000

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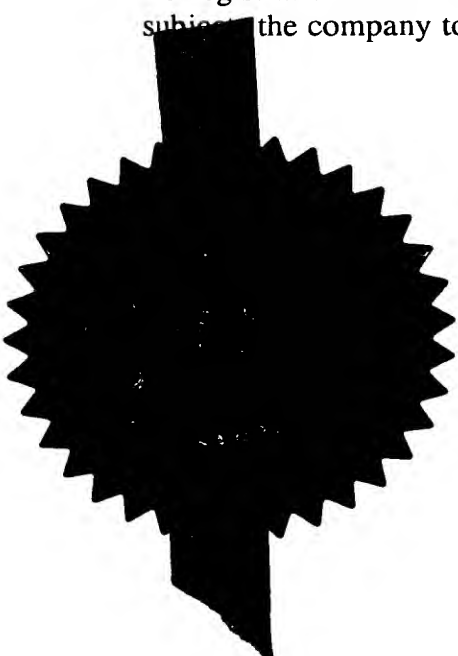
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Signed

*P. Mahoney*

Dated 31 May 2000



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The Patent Office

Cardiff Road  
Newport  
Gwent NP9 1RH

27 MAY 1999

1. Your reference SCB/52846/000

2. Patent application number  
(The Patent Office will fill in this part)

**9912443.0**

3. Full name, address and postcode of the or of each applicant (underline all surnames)

**BARRIER BIOTECH LIMITED  
36 HAVERSCROFT INDUSTRIAL ESTATE  
NEW ROAD  
ATTLEBOROUGH  
NORFOLK NR17 1YE**

Patents ADP number (if you know it)

If the applicant is a corporate body, give the country/state of its incorporation

**UNITED KINGDOM**

7669423001 Mb.

4. Title of the invention ANTIPARASITIC FORMULATION

5. Name of your agent (if you have one)

**BOULT WADE TENNANT  
27 FURNIVAL STREET  
LONDON  
EC4A 1PQ**

"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)

Patents ADP number (if you know it)

**42001** ✓

If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number

Country

Priority application number  
(if you know it)

Date of filing  
(day/month/year)

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

Date of filing  
(day / month / year)

8. Is a statement of inventorship and of right to grant of a patent required in support of this request?

**YES**

(Answer 'Yes' if:

- a) any applicant named in part 3 is not an inventor, or
- b) there is an inventor who is not named as an applicant, or
- c) any named applicant is a corporate body.

See note (d))

# Patents Form 1/77

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Continuation sheets of this form 0

Description 5

Claim(s) 2

Abstract 0

Drawing(s) 0



10. If you are also filing any of the following, state how many against each item.

## Priority documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (*Patents Form 7/77*)

Request for preliminary examination and search (*Patents Form 9/77*)

Request for substantive examination (*Patents Form 10/77*)

Any other documents  
(*Please specify*)

11

I/We request the grant of a patent on the basis of this application.

 Signature

Date

27 May 1999

12. Name and daytime telephone number of person to contact in the United Kingdom

COLM D. MURPHY  
0171430 7500

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DUPLICATE

- 1 -

### ANTIPARASITIC FORMULATION

5 The present invention is concerned with an antiparasitic formulation and, in particular, with an antiparasitic formulation which can be used to control ectoparasitic infestation and resulting contagious diseases of sheep.

10 Many antiparasitic formulations are known, for example, as pour-on formulations or as total immersion dips for treating sheep. Plunge dipping is a technique which is generally used to control certain parasitic infestations of sheep, such as skin  
15 parasites, because it allows thorough penetration of the fleece by the antiparasitic formulation. The formulations used to treat ectoparasitic infestations, generally, comprise compounds which contribute to irritancy of or toxicity to the animal upon  
20 administration thereto. Examples of such compounds include pyrethroids and permethrins for pour-on formulations, whilst in plunge dips organophosphates are frequently used.

25 These compounds are toxic not only to the animals but to the administrators alike. Furthermore, many sheep dip formulations cannot be used to treat, for example, larval infestation of wounds such as in the case of the larvae of blowfly which feed on the dead and damaged tissue associated with wounds. Treatment of  
30 blowfly larvae is normally carried out using mild insecticidal creams. Toxic substances, such as contained in many sheep dips, cannot be applied to open wounds. The formulations used previously also contribute to serious environmental and ecological  
35 damage if they are released into the environment. Accordingly, the use of these compounds must be tightly controlled and a considerable number of

regulations apply to, for example, disposal of sheep dips.

Accordingly, there exists a need for formulations which when applied to an animal can effectively eradicate ectoparasitic infestation and any resulting contagious diseases and which formulation similarly alleviates or ameliorates the disadvantages described above whilst minimising trauma and shock to the animal.

Therefore, there is provided by a first aspect of the present invention, an antiparasitic formulation comprising in an antiparasitically effective amount, Eucalyptus oil, Cajeput oil, Lemongrass oil, Clove bud oil, Peppermint oil, Piperonyl and Piperonyl Butoxide. Preferably, the formulation is further diluted with water and in such an embodiment an amount of a suitable surfactant is also included in the formulation.

In a preferred embodiment, the formulation comprises:

	% By Volume
Eucalyptus oil	4-6
Cajeput oil	0.5-2.5
Lemongrass oil	1-3
Clove bud oil	0.5-2.5
Peppermint oil	0.5-2.5
Piperonyl	1.5-3.5
Piperonyl Butoxide	0.3-0.9
Surfactant	0.05-0.15
Water	80-90%

Preferably, however, the formulation comprises in approximate amounts by volume, 5.3% Eucalyptus oil, 1.3% Cajeput oil, 2.0% Lemongrass oil, 1.3% Cajeput oil, 2.0% Lemongrass oil, 1.3% Clove bud oil, 1.3%  
5 Peppermint oil, 2.7% Piperonyl, 0.6% Piperonyl Butoxide, Surfacare T20 0.1% and water 85.4%.

In a preferred embodiment the formulation may be further diluted to 1 part formulation per 200 parts  
10 water, for use as a sheep dip.

The formulations according to the invention are particularly advantageous because they avoid the use of compounds such as organophosphates which can be  
15 toxic both to the animal and the environment. The absence of such compounds also minimises any trauma, shock or irritancy to the animal. The formulations are also safe for use by humans without risk to health. The formulations are also considerably less  
20 damaging to the environment. The oils used are registered with the Department of Novel Foods and Flavours at the Ministry of Agriculture Fisheries and Foods. Neither the Council of Europe's Committee of Experts on Flavouring Substances nor any other  
25 European committee has recommended limits on the use of these essential oils. These oils have been evaluated by the US Flavouring Extract Manufacturers' Association (FEMA) who have classified them as GRAS (Generally Recognised As Safe) in 1965. These  
30 assessments were published in a paper Hall R.L. and Oser B.L. (1965). The formulations of the present invention therefore avoid the use of any permethrins, pyrethrums or derivatives thereof or organophosphates so they are significantly safer for the animal, the  
35 operator and the environment.

The formulation according to the invention may also,

advantageously, be used to treat ectoparasitic infestation of animals, such as sheep, and also contagious diseases resulting from the infestation.

5 According to a further aspect of the invention, there is also provided use of a formulation according to the invention for the manufacture of a medicament for treating an animal of ectoparasitic infestation. The formulations may be applied directly to the animal but  
10 preferably are used in a total immersion dip, such as used in a sheep dip, thus allowing the formulation to sufficiently penetrate the fleece so as to substantially eradicate the infestation.

15 External parasites of sheep include, amongst others, *Damalinia ovis* (biting louse), *Linognathus ovillus* (sucking louse), *Lucilia spp* (blowfly), *Culicoides* (midges), *Hydrotaea irritans* (headfly). The formulation of the invention may be used to control  
20 infestation of sheep by these parasites. Other parasites that may be effectively eradicated by the formulation of the invention include scab mite (*Psoroptes Communia Ovis*), tick pyremia and other tick borne fever, sarcoptic mange and keds. The  
25 formulation of the invention is, however, particularly useful in repelling the blowfly parasite and in eradicating the larvae of the blowfly which infest open wounds in sheep. Thus, the formulation is particularly advantageous by virtue of its use as a  
30 dip formulation and yet which is sufficiently non-toxic to the animal that it can also be used, not only to repel the blowfly but to eradicate blowfly larvae, which cannot normally be treated with sheep dip formulations.

35

The invention may be more clearly described by reference to the following example:



A formulation according to the invention was prepared by combining and mixing all of the oils of the following ingredients in the approximate amounts provided:

5

	% product
Eucalyptus oil	5.3
Cajeput oil	1.3
Lemongrass oil	2.0
Clove bud oil	1.3
Peppermint oil	1.3
Piperonyl	2.7
Piperonyl Butoxide	0.6
Surfacare T20	0.1
Water	85.4
Total	100%

10

15

The mixture is then slowly stirred at ambient temperature and then the surfactant is added in addition to a small amount of water. The mixture is then high shear stirred to a cream consistency before the final addition of water up to the percentage amount identified above. The product is then pH tested and sampled against a GC standard. Application of the formulation to sheep by way of a plunge dip served to alleviate infestation of sheep by their common parasites.

20

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CLAIMS

1. An antiparasitic formulation comprising  
Eucalyptus oil, Cajeput oil, Lemongrass oil, Clove bud  
5 oil, Peppermint oil, Piperonyl and Piperonyl Butoxide.

2. A formulation according to claim 1, further  
diluted with water and comprising an appropriate  
surfactant.

10

3. A formulation according to claim 1 or 2  
comprising by volume, Eucalyptus oil, 4-6% Cajeput oil  
0.5-2.5%, Lemongrass oil 1-3%, Clove bud oil 0.5-2.5%,  
peppermint oil 0.5-2.5, Piperonyl 1.5-3.5%, Piperonyl  
15 Butoxide 0.3-0.9%, Surfactant 0.05-0.15%, Water 80-  
90%.

4. A formulation according to any preceding claim  
comprising in approximate amounts by volume,  
20 Eucalyptus oil 5.3%, Cajeput oil 1.3, Lemongrass oil  
2.0%, Clove bud oil 1.3%, Peppermint oil 1.3%,  
Piperonyl 2.7%, Piperonyl Butoxide 0.6%, Surfactant  
(Surfacare T20) 0.1%, Water 85.4%.

25 5. A formulation according to any of claims 1 to 4  
which is further diluted to 1 part formulation to 200  
parts water.

6. A formulation according to any of claims 1 to 5  
30 for treating ectoparasitic infestation of an animal or  
for use as a repellent to said parasites.

7. A formulation according to claim 6 wherein said  
animal is a sheep.

35

8. A formulation according to claim 6 or 7 wherein  
said ectoparasite is blowfly or its larvae.

9. Use of a formulation according to any of claims 1 to 5 in the manufacture of a medicament for treating ectoparasitic infestation of an animal or for repelling said parasites.

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10. Use according to claim 9 wherein said animal is a sheep.

10 11. Use according to claim 9 or 10 wherein said ectoparasite is blowfly or its larvae.

12. A sheep dip comprising a formulation according to claim 5.

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